CHAPTER 9

THE DISTRIBUTIONAL IMPACT OF MONETARY POLICY ON INCOME INEQUALITY: A CASE IN VIETNAM

By

Tran Huu Tuyen¹, Trieu Kim Lanh², Le Phuong Thao³

1. Introduction

During the last two decades, Vietnam has dramatically reduced the level of poverty. Income inequality has become an important public topic in Vietnam, as well as around the world. The gap between the rich and the rest of the population has been increasing vastly over more than 40 years in the world. In Vietnam, average incomes are rising and the number of people who are living in poverty has fallen steadily and significantly in recent years (Oxfam, 2017; World Bank, 2014). The official poverty line in Vietnam is based on income and is used basically for targeting social programs. Since June 2016, the poverty line has been applied: the rural poverty line was VND700,000 per capita per month; and in the urban areas, this was VND1,000,000 per capita per month. Rising income inequality has been a deep concern in recent years. World Bank data shows that income inequality has increased in the last two decades in Vietnam. More importantly, the rich holds the largest share of income. From the data of the Vietnam Household Living Standard Surveys (VHLSS)⁴, the gap between the richest quintile and the rest has also been widening since 2004 (Oxfam, 2017). However, average incomes of the bottom 40 grew at 9 percent each year over the last twenty years up to 2012. In the period of 2000-2018, the Gini Index of Vietnam reached its peak point, which was 39.3 in 2010, placing it in the middle of the global Gini distribution. Concerns about inequality have arisen although the economic growth of Vietnam is changing positively and rapidly together with slight increases in income inequality. These concerns in part may reflect the substantial disparities in economic conditions of geographical areas and ethnic groups (World Bank, 2014). This aggravates economic inequality further by the poverty of voice and opportunities. In Vietnam, ethnic minorities⁵, small-scale farmers, migrant workers, and women are more likely to be poor and face the most discrimination (Oxfam, 2017). The population that experiences poverty is mainly in the North West and North East, in the border areas of the North Central and South Central Coasts, and some parts of the Central Highlands (World Bank, 2014).

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⁴. Vietnam Households Living Standard Surveys are conducted by the General Statistics Office of Vietnam (GSO) with technical assistance from the World Bank. The VHLSS is carried out every two years. The lastest survey is the 2016 VHLSS.
⁵. Ethnic minorities are about 15 percent of the Vietnam’s population, but account for 70 percent of the extreme poor (Oxfam, 2017; World Bank, 2014).
Studying the relationship between economic growth and income inequality is still an important topic in Vietnam, as well as around the world. More researches on monetary policy and income inequality are needed to provide recommendations in reducing inequality and poverty.

2. Overview of Monetary Policy Management of the State Bank of Vietnam and Inequality Income in Vietnam

2.1 Monetary Policy Management of the State Bank of Vietnam

According to Article 3 Law on the State Bank of Viet Nam (SBV), the national monetary policies are national-level decisions on monetary affairs made by state authorities, including decisions on the currency value stabilization represented by the inflation target, use of proper instruments and measures to fulfill the set objectives. Every year, based on the guidance of the National Assembly and the Government, the SBV issues Directives setting orientations, key tasks for the whole banking sector, including targets of monetary policy management. In general, monetary policy is conducted in an active, flexible and effective manner, closely coordinating with fiscal policy and other macroeconomic policies to control the inflation, stabilize the monetary and financial system, stabilize the macroeconomy, and contribute to the economic growth at a sustainable level, ensuring the liquidity of credit institutions as well as stabilizing the monetary and foreign exchange markets. With the implementation of strong solutions since 2012, inflation has been well-controlled below the goal set by the National Assembly while the economic growth rate has reached an impressive level (Table 1) (Dang, 2018; N. H. Vu, Tran, Nguyen, Phan, & Le, 2019).
Table 1
The indicators of Inflation and Economic Growth between Target and Actual Value, 2001 – 2018

<table>
<thead>
<tr>
<th>Year</th>
<th>CPI</th>
<th>GDP Growth Rate</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Target</td>
<td>Actual Value</td>
<td>Target</td>
<td>Actual Value</td>
</tr>
<tr>
<td>2001</td>
<td>5</td>
<td>-0.3</td>
<td>7.5 - 8</td>
<td>6.9</td>
</tr>
<tr>
<td>2002</td>
<td>5</td>
<td>4.2</td>
<td>7 - 7.5</td>
<td>7.1</td>
</tr>
<tr>
<td>2003</td>
<td>3</td>
<td>3.2</td>
<td>7 - 7.5</td>
<td>7.3</td>
</tr>
<tr>
<td>2004</td>
<td>&lt; 5</td>
<td>7.7</td>
<td>7.5 - 8</td>
<td>7.8</td>
</tr>
<tr>
<td>2005</td>
<td>&lt; 6.5</td>
<td>8.3</td>
<td>8.5</td>
<td>8.4</td>
</tr>
<tr>
<td>2006</td>
<td>8</td>
<td>7.4</td>
<td>&lt; 8</td>
<td>8.2</td>
</tr>
<tr>
<td>2007</td>
<td>&lt; 8.2 - 8.5</td>
<td>8.3</td>
<td>8.2 - 8.5</td>
<td>8.5</td>
</tr>
<tr>
<td>2008</td>
<td>&lt; 8.5 - 9</td>
<td>23.1</td>
<td>7*</td>
<td>6.3</td>
</tr>
<tr>
<td>2009</td>
<td>&lt; 15.7*</td>
<td>6.7</td>
<td>5</td>
<td>5.3</td>
</tr>
<tr>
<td>2010</td>
<td>&lt; 7.8*</td>
<td>9.2</td>
<td>6.5</td>
<td>6.4</td>
</tr>
<tr>
<td>2011</td>
<td>7.15*, 17*</td>
<td>18.7</td>
<td>7 - 7.5</td>
<td>6.2</td>
</tr>
<tr>
<td>2012</td>
<td>&lt; 10</td>
<td>9.1</td>
<td>6 - 6.5</td>
<td>5.2</td>
</tr>
<tr>
<td>2013</td>
<td>8</td>
<td>6.6</td>
<td>5.5</td>
<td>5.4</td>
</tr>
<tr>
<td>2014</td>
<td>7</td>
<td>4.1</td>
<td>5.8</td>
<td>6.0</td>
</tr>
<tr>
<td>2015</td>
<td>&lt; 5</td>
<td>0.6</td>
<td>6.2</td>
<td>6.7</td>
</tr>
<tr>
<td>2016</td>
<td>&lt; 5</td>
<td>2.7</td>
<td>6.7</td>
<td>6.2</td>
</tr>
<tr>
<td>2017</td>
<td>About 4</td>
<td>3.5</td>
<td>6.7</td>
<td>6.8</td>
</tr>
<tr>
<td>2018</td>
<td>About 4</td>
<td>3.5</td>
<td>6.7</td>
<td>7.1</td>
</tr>
</tbody>
</table>

Note: * changing the target in year.

To conduct monetary policy, the State Bank of Vietnam uses monetary policy instruments, including refinancing, interest rates, foreign exchange rate, compulsory reserves, open-market operations and other instruments and measures as regulated by the Government. All the instruments are conducted in a proactive, flexible and cautious manner. In this research paper, we will focus on related instruments such as policy interest rate (in the context of the SBV’s interest rate policy), foreign exchange rate and credit policy.

2.1.1 Policy Interest Rate

According to Pham Chi Quang et al. (2018), policy interest rates include refinancing rate, rediscount rate, overnight lending rate, base interest rate\(^7\), open market operation (OMO) reverse repo rate, SBV bill rate. The significance of the above-mentioned interest rates as policy rates varies depending on each specific period. The rates are managed in close relation with relevant business processes and they move in parallel with one another when the State Bank of Vietnam makes changes on monetary policy management. The refinancing rate, rediscount rate and overnight lending rate were managed more actively during 2005-2014 and have gradually stabilized in recent years along with the stable trend of other interest rates as reflected by SBV’s interest rate policy in general. At the end of 2018, the refinancing rate was 6.25 percent per annum, the rediscount rate was 4.25 percent per annum while the overnight interbank lending rate was 7.25 percent per annum. As all policy rates move along with each other, the policy rate used to run the model is the refinancing rate.

Figure 1
Refinancing Rate of SBV, 2000 - 2018

![Refinancing Rate of SBV, 2000 - 2018](image)

Source: IFS (2019).

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7. Base interest rate was used as policy interest rate mainly during 2000-2010. It was introduced in 2000 with the original target as an indicator for credit institutions setting lending rate cap. However, from 2002-2008, following interest rate liberalization, the base rate was considered only as a reference. In 2008, the base rate once again worked as cap for both deposit and lending rate set by credit institutions with the regulation requirement that VND deposit and lending rate could not exceed 150 percent of the base rate. As other interest rate instruments were proven to be more effective, the use of the base rate gradually faded. Since 2010, the State Bank of Vietnam has stopped announcing the monthly base interest rate.
2.1.2 Exchange Rate Management

In general, exchange rate management is conducted in a uniformed and flexible manner. There was an important change in exchange rate policy in 2016. Before 2016, the exchange rate was regulated based on the average interbank exchange rate and trading band. From 2016, the central exchange rate (USD/VND) has been used. The central exchange rate is announced on a daily basis based on developments in the domestic and international markets, macroeconomic and monetary balances and monetary policy objectives. Different from the previous interbank exchange rate which was only adjusted upon specific events, the central exchange rate has been conducted on a daily basis, moving in both directions (upward and downward) which contribute to the trimming down of foreign currency speculation and reducing the dollarization in the economy. Other than that, the buying/selling exchange rate, forward foreign exchange purchases/sales with credit institutions are also actively used. In short, the exchange rate policy is well managed, consistent with other policies such as liquidity management, VND, and USD interest rates, communication policy, in order to enhance the transparency and effectiveness of foreign exchange policy in particular and, monetary policy in general. Therefore, in recent years, the exchange rates have been relatively stable, with flexible movements in accordance with the changes in the market conditions and the legitimate demands for foreign currencies have been met fully and promptly. The SBV’s net purchases of foreign currencies have constantly supplied the State’s foreign exchange reserves.

Figure 2
Exchange Rate, VND per USD (Average), 2000-2018

Source: ARIC (2019).
2.1.3 Credit Policy

In line with other monetary policy instruments, the credit growth target has been used since 2010. During 2010-2011, only a credit growth target for the whole banking system was applied, but since 2012, both credit growth targets for the banking system and credit growth limit for each credit institution have been managed. Specifically, the credit growth cap is set on the basis of economic growth and inflation target set by the National Assembly and the Government. The credit growth ceilings for individual credit institutions are allocated based on their financial soundness, their demand and their ability to expand credit activities in a safe manner. The SBV also requires credit institutions to constantly improve credit quality, concentrate credit capital on the production domains, especially on the prioritized areas under the Government’s directions and strictly controlling credit for risky areas. In the specific year (2011-2012), credit to non-production sectors to total outstanding credit was reined to less than 22% (by 30/6/2011), 16% in 2012 (but some borrowers and borrowing purposes were removed from the non-production sectors). This ratio was abandoned in 2013 as the SBV changed the regulation from limiting credit in non-production sectors to encouraging credit institutions to channel credit to prioritized areas.

For the purpose of this research, the variable “claim on the private sector” is used to represent the effect of credit policy on the private sector.

Figure 3
Claims on the Private Sector, y-o-y%, 2000-2018
2.2 Income Inequality in Vietnam

According to the Longman Dictionary, inequality is an “unfair situation, in which some groups in society have more money, opportunities, power, etc. than others” (Longman, 2019). This is a concept very much at the heart of social justice theories. Many people understand the definition of inequality in different dimensions. Some authors distinguish “economic inequality” mostly meaning “income inequality”, “monetary inequality”, or more widely, “living conditions inequality” (United Nations, 2015; N. H. Vu et al., 2019). Regarding economic inequality, there are two approaches or views to consider. The first view is only concerned with the inequality of outcomes and the second view is concerned with the inequality of opportunity. The inequality of outcomes occurs when there is inequality in individuals’ possession of material wealth or overall living economic conditions such as inequalities in income/wealth, education, health and nutrition. The second approach of income inequality is concerned with human well-being, which should be defined and measured through beings and doings valued by people and the freedom to choose or to act. There is the difference in age, gender, family background, disability, climatic conditions, societal conditions, customs, and convention, among other factors, so equalizing income should not be the goal, because not all people convert income into well-being and freedom in the same way. On the other hand, what should be equalized is not a means of living, people have the actual opportunities of living to pursue their own lives (United Nations, 2015; N. H. Vu et al., 2019).

From the point of view of income and expenditure, the inequality of outcomes is the result of the interaction between inequality of opportunities, societal institutions, effort, and luck. Opportunities mean the individual circumstances at birth which are different from one another, for example, genders, ethnic groups, place of birth, and the income or education levels of parents. Societal institutions are the economic and political rules and organizations of society. The effort is an attempt by every individual in every action. Finally, luck also plays a key role in determining the individual’s achievement and inequality of outcomes (World Bank, 2014).

**Figure 4**

A Framework for Understanding Inequality of Outcomes

![Figure 4](source: World Bank (2014)).

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8. Health care, education systems, the prevalence of crime, community relationships.
Finally, although there are two approaches to inequality, development theory has largely been concerned with inequalities in standards of living which means that it is defined in terms of the traditional outcome-oriented view (United Nations, 2015; N. H. Vu et al., 2019).

Inequality is a broader concept than poverty and it is defined over the entire population, not just a portion of the population. The simplest way to measure inequality is by dividing the population into fifths (quintiles) from the poorest to the richest and reporting the proportions of income (or expenditure) that accrue at each level. There have been various measures of inequality developed since 1983, but the following measures are generally used: (i) Decile Dispersion Ratio, (ii) Gini Coefficient of Inequality, (iii) Generalized Entropy Measures (or Theil Indexes), (iv) Atkinson’s Inequality Measures, and (v) Measuring Pro-poor Growth (Haughton & Khandker, 2009; N. H. Vu et al., 2019). Among the indicators measuring inequality above, the Gini Index is a popular measure, which ranges from 0 to 1. If the result of the Gini Index is 0, it means that there is perfect equality, or vice-versa, it is perfect inequality. Usually, the typical range of the Gini Index is between 0.3 to 0.5 for per capita expenditure. Although the Gini Index coefficient is easy to understand and has many desirable properties, it cannot be easily decomposed to show the sources of inequality (Haughton & Khandker, 2009; N. H. Vu et al., 2019).

The income inequality of Vietnam using the Gini coefficient estimated by the World Bank and updated in December 2016 stood at 35.3 percent. Figure 5 shows that the inequality trend appears to be increasing. From 1992-2016, the average Gini coefficient was 35.6 percent per year by the World Bank estimate. The trend reached a peak of 39.3 percent in 2010 before dropping to a low of 34.8 percent in 2014 (CEIC, 2019b; N. H. Vu et al., 2019; World Bank, 2018).

![Figure 5: Gini Index of Vietnam, 2000-2018](source)


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9. Such as mean independence, population size independence, symmetry, and Pigou-Dalton Transfer sensitivity.
Table 2 reveals that the increase in inequality occurred entirely in the rural areas instead of urban areas, especially at the Central Highlands and Mekong Delta with an increase in the Gini Index by approximately 2 percent. The data confirmed by the Theil index also reinforces this circumstance of Vietnam’s inequality (Table 2) (N. H. Vu et al., 2019; World Bank, 2018).

Table 2  
Trends in Inequality, 2010-2016

<table>
<thead>
<tr>
<th>Region</th>
<th>Gini Coefficient</th>
<th>Theil Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>National</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>38.6</td>
<td>31.7</td>
</tr>
<tr>
<td>Rural</td>
<td>33.2</td>
<td>34.4</td>
</tr>
<tr>
<td>Region</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red River Delta</td>
<td>40.1</td>
<td>34.4</td>
</tr>
<tr>
<td>Midlands and Northern Mountains</td>
<td>37.1</td>
<td>36.6</td>
</tr>
<tr>
<td>Northern and Coastal Central</td>
<td>34.0</td>
<td>33.3</td>
</tr>
<tr>
<td>Central Highlands</td>
<td>36.7</td>
<td>37.9</td>
</tr>
<tr>
<td>Southeast</td>
<td>39.8</td>
<td>33.3</td>
</tr>
<tr>
<td>Mekong Delta</td>
<td>31.7</td>
<td>30.3</td>
</tr>
</tbody>
</table>


Vietnam’s GDP per capita growth which is updated yearly, is estimated by the World Bank, averaging 5.095 percent during the period of 1985-2017. From Figure 6, it can be noted that the GDP per capita growth of Vietnam reached a maximum of 7.685 percent in 1995 and a minimum of 0.469% in 1986 (at 427,356 USD). In 2017, GDP per capita growth in Vietnam was reported at 5.726 percent in December (at 2,389 USD). The income of Vietnam has been increasing considerably overtime. Meanwhile, the income inequality trend has also been steadily increasing. Although the inequality trend is decreasing in the urban areas and going up in the rural, the income inequality of the urban areas is still higher than those of the rural at about 1.1 percent (Table 2).
Figure 7 reveals that the population by economic class changed sharply in 2010 compared with 2016. Following that, the share of households classified as economically secure and middle class increased from less than 50 percent in 2010 to 70 percent in 2016. The population classified as economically vulnerable, moderately poor and extreme poor decreased quickly from 50.8 percent in 2010 to 29.7 percent in 2016, which shows that the households not only managed to escape poverty but could progress out of the economic insecurity to a place in the consumer class. The consequence is that poverty reduction in Vietnam has had encouraging results, providing robust evidence of upward movement, but nonetheless, there is the potential of increasing income inequality (N. H. Vu et al., 2019; World Bank, 2018).
3. Related Literature

3.1 Related Papers of Monetary Policy and Income Inequality

In empirical research, most studies focused on the impact of monetary policy on income inequality and their findings can be divided into three groups as follows: (i) monetary policy does not affect income inequality significantly (Inui, Sudo, & Yamada, 2017; O’Farrell, Rawdanowicz, & Inaba, 2016), (ii) contractionary monetary policy increases income inequality (Coibion, Gorodnichenko, Kueng, & Silvia, 2012; Davtyan, 2016; Furceri, Loungani, & Zdzenicka, 2016; N. H. Vu et al., 2019), and (iii) expansionary monetary policy increases income inequality (Bivens, 2015; Furceri et al., 2016; N. H. Vu et al., 2019). Other researches, however, derived different results from the abovementioned three groups (Davtyan, 2016; Domanski, Scatigna, & Zabai, 2016; Saiki & Frost, 2014).
### Table 3
Some Related Researches on Monetary Policy and Income Inequality

<table>
<thead>
<tr>
<th>No.</th>
<th>Author</th>
<th>Objectives</th>
<th>Methodology</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Inui et al. (2017)</td>
<td>Studying the distributional effects of monetary policy</td>
<td>DSGE model LLP(^{10}) approach</td>
<td>Japan, micro-level data of households, quarterly, 1981Q1-2008Q4</td>
</tr>
<tr>
<td>3</td>
<td>O’Farrell et al. (2016)</td>
<td>The effects of monetary policy on inequality over the business cycle via its impacts on returns on assets, the cost of debt servicing and asset prices</td>
<td>Analyzing two-way interactions</td>
<td>Selected advanced economies, 2007-2015</td>
</tr>
<tr>
<td>4</td>
<td>Coibion et al. (2012)</td>
<td>Analyzing the effects and historical contribution of monetary policy shocks to consumption and income inequality in the United States</td>
<td>VAR</td>
<td>The U.S., micro-level data on income and consumption, quarterly, 1980Q1-2008Q4</td>
</tr>
<tr>
<td>5</td>
<td>Furceri et al. (2016)</td>
<td>The effect of monetary policy shocks on income inequality</td>
<td>VAR</td>
<td>A panel of 32 advanced and emerging market countries, 1990-2013</td>
</tr>
<tr>
<td>6</td>
<td>Bivens (2015)</td>
<td>Comparing the distributional consequences of Fed policy on two counterfactuals: (1) a fiscal stimulus with roughly the same boost to output as low-interest rates and LSAPs(^{11}) produced and (2) no macroeconomic stimulus at all</td>
<td>Analyzing and OLS</td>
<td>The U.S., 1979-2011</td>
</tr>
<tr>
<td>7</td>
<td>Domanski et al. (2016)</td>
<td>Exploring the recent evolution of household wealth inequality in advanced economies by looking at valuation effects on household assets and liabilities</td>
<td>Analyzing and simulation</td>
<td>Advanced economies, micro-level data, 1810-2010</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td>VAR VECM</td>
<td>The U.S., annually, 1979-2012</td>
</tr>
<tr>
<td>9</td>
<td>Saiki and Frost (2014)</td>
<td>The impact of unconventional monetary policy (UMP) on inequality</td>
<td>VAR</td>
<td>Japan, quarterly, 2008Q3-2014Q1</td>
</tr>
</tbody>
</table>

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10. The Local Linear Protection proposed by Jorda (2005).
11. Large-scale asset purchases known as “quantitative easing”.
Table 4
The Results of Related Researches

<table>
<thead>
<tr>
<th>No.</th>
<th>Author</th>
<th>Contractionary Monetary Policy</th>
<th>Expansionary Monetary Policy</th>
<th>Unconventional Monetary Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Increase</td>
<td>Decrease in short-term</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Inui et al. (2017)</td>
<td></td>
<td>Insignificant</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>O’Farrell et al. (2016)</td>
<td>Insignificant</td>
<td>Insignificant</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Coibion et al. (2012)</td>
<td>Increase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Furceri et al. (2016)</td>
<td>Increase</td>
<td>Decrease</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Bivens (2015)</td>
<td></td>
<td>Decrease</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Domanski et al. (2016)</td>
<td></td>
<td>Increase</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Davtyan (2016)</td>
<td>Decrease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Saiki and Frost (2014)</td>
<td></td>
<td>Increase</td>
<td></td>
</tr>
</tbody>
</table>

For the VAR model results, N. H. Vu et al. (2019) stated that monetary policy (variables used were money supply shock and policy rate) and economic growth were the main factors that affected income inequality in Vietnam for the period 2000-2015. The impact magnitude was quite big and stable while the impact orientation could be explained by economic theories. There was no statistical evidence for other factors such as inflation, unemployment rate, and education status to confirm the contribution of these variables to the change of the Gini index.

Meanwhile, Inui et al. (2017) find that monetary policy shocks do not have statistically significant impacts on inequalities across Japanese households in a stable manner. O’Farrell et al. (2016) demonstrate that the effects of monetary policy on inequality through financial channels tend to be small and vary significantly for 8 OECD countries. Coibion et al. (2012) show that contractionary MP tends to raise inequality in earnings and total income in the USA. Furceri et al. (2016) find that contractionary (expansionary) monetary actions increase (reduce) income inequality. Bivens (2015) finds that expansionary monetary policy could reduce inequality if the economy is close to full employment, but that the relative distributional effects of recent Fed policy actions are small. Domanski et al. (2016) find that the impact of low-interest rates and rising bond prices on wealth inequality may have been small, while rising equity prices may have added to wealth inequality. A recovery of house prices appears to have only partly offset this effect. Davtyan (2016) finds that contractionary monetary policy decreases income inequality in the country. Saiki and Frost (2014) argue that unconventional monetary policy raises income inequality in Japan in the short-run.
3.2. Related Papers of Economic Growth and Income Inequality

Except for the publication of N. H. Vu et al. (2019) which study the impact of the monetary policy and income inequality in Vietnam, there are other researches which delve into economic growth and income inequality.

In general, the other papers were conducted domestically (Vietnam) and looked at economic growth and income inequality. Some papers delved into the impact of foreign direct investment on income inequality (Nguyen & Nguyen, 2019) while others were about economic growth and inequality or imparity. The results show that there is an insignificant impact on economic growth and inequality (Le, 2010b) and vice-versa. Some reveal a positive relationship (T. S. Vu, 2010). Almost all suggest some recommendations and policy implications based on the detailed analysis of the statistical data on GDP per capita, income trend of quintiles, the gap of the rich and the poor and public resource allocation which are still not rationalized (Le, 2010a; Ngo & Nguyen, 2005; Pham, 2010). Almost all the research uses the Gini Coefficient Index as a variable proxying for income inequality.
Table 5
Some Related Researches on Economic Growth and Income Inequality in Vietnam

<table>
<thead>
<tr>
<th>No.</th>
<th>Author</th>
<th>Objectives</th>
<th>Methodology</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Pham (2010)</td>
<td>Estimating income inequality among provinces, finding out the reasons for inequality, regressing to study the relationship between income growth and economic growth, fiscal policy</td>
<td>Cross regression, data analysis</td>
<td>61 provinces and cities in Vietnam, 2000-2008</td>
</tr>
<tr>
<td>4</td>
<td>Le (2010b)</td>
<td>Employing the impact of income inequality on economic growth in Vietnam</td>
<td>Regressing 3 models with variables: GDP growth rate, Gini index, the gap of the richest quintile and the poorest one, some socio-economic variables</td>
<td>Vietnam, 1998-2006</td>
</tr>
<tr>
<td>5</td>
<td>Le (2010a)</td>
<td>Summarizing the theory and practice economic growth and income inequality, analyzing and recommending to promote sustainable economic development.</td>
<td>Analyzing the date of income and GDP: Gini index, GDP per capita, quintiles</td>
<td>Vietnam, 1993-2006</td>
</tr>
</tbody>
</table>

Nguyen and Nguyen (2019) study the relationship between foreign direct investment and income inequality by using the data of 50 cities and provinces in Vietnam. They measure income inequality through the population-weighted coefficient of variation (PW-CV) of Kyriacou and Roca-Sagalés (2012). The results show that FDI flows affect income inequality in the form of reverse U. This is the updated research on income inequality in Vietnam.
Pham (2010) measured income inequality through the concept of convergence in the Neoclassical Growth Model according to Barro and Sala-i-Marti (1992). Pham (2010) used the GDP per capita, in comparison with the price of 1994, of 61 provinces and cities for the period of 2000-2008 and the results show that there was no convergence between $\beta$ and $\delta$ in Vietnam over these years. The poor areas did not tend to grow faster than the rich ones as implicated by the Solow growth model. The results also suggest that it was necessary to adjust fiscal policy in order to allocate public resources more optimally.

T. S. Vu (2010) examined the effect of economic growth on income inequality in Vietnam for the period 1998-2006 using the OLS regression and came to two conclusions that: (i) in terms of the total economy, inequality had the positive relationship with economic growth in Vietnam; (ii) in terms of the scope of the economic areas, there is a positive relationship between the income inequality level and economic growth in the economic areas which better developed, especially the Red River Delta, Mekong Delta, Southeast, and Central Highlands.

Le (2010a) measured income inequality via the Gini index and conducted a detailed analysis of the relationship between economic growth and income inequality for the period of 1993-2006. The results reveal that the impact of economic growth on inequality in Vietnam may be derived from various channels as follows: (i) the conversion from the centralization of a planned economy to a market mechanism, (ii) the rapid economic growth due to industrialization and urbanization, (iii) integration of international economy and opening of the economy, and (iv) the formation of beneficiary groups because of the give-receive mechanism.

Le (2010b) used an econometric model to find out the effect of income inequality on economic growth for the period of 1996-2006 in Vietnam. The results show that income inequality caused insignificant economic growth because some indicators such as the possibility of capital inclusion, education, healthcare, and population reproduction showed a negative effect, albeit some being positive.

Ngo and Nguyen (2005) divided the paper into 2 sections. Section 1 have a generalization of the tripartite relationship between economic growth, poverty and income inequality using Vietnam data. Section 2 was an analysis of the tripartite relationship by statistical data and the matrix indicators. The analysis was conducted for the period of 1992-1998 and looked at two phases, especially during the “Doi Moi” period.
4. The Distributional Effect of Monetary Policy in Vietnam: A VAR Model Approach

4.1 Data

Data used in the empirical analysis are collected from various sources, including CEIC, ADB, IFS, SBV, and GSO for the period from 2000-2018. Data is available quarterly except for the Gini Index which is calculated every 2 years. We interpolated the Gini Coefficient Index from every 2 years into quarterly data. All variables are shown in the logarithm form, ratio to GDP or growth rates, depending on the variables. Figure 8 shows the fluctuations of variables used in the model and Table 6 provides the summary statistics of the variables.

![Figure 8: Fluctuation of Variables](source: Team’s calculations.)
### Table 6
Summary Statistics

<table>
<thead>
<tr>
<th></th>
<th>REFIN_RATE</th>
<th>EXC_RATE</th>
<th>GINI</th>
<th>CLAIM</th>
<th>CA_GDP</th>
<th>INF</th>
<th>GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>0.831012</td>
<td>4.256549</td>
<td>1.557969</td>
<td>9.672745</td>
<td>-0.498513</td>
<td>1.628547</td>
<td>6.732263</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td>0.812900</td>
<td>4.229746</td>
<td>1.554144</td>
<td>9.702850</td>
<td>0.204000</td>
<td>1.089872</td>
<td>6.833000</td>
</tr>
<tr>
<td><strong>Maximum</strong></td>
<td>1.176100</td>
<td>4.356876</td>
<td>1.597575</td>
<td>10.48212</td>
<td>15.76100</td>
<td>8.968726</td>
<td>9.261000</td>
</tr>
<tr>
<td><strong>Minimum</strong></td>
<td>0.681200</td>
<td>4.147779</td>
<td>1.536322</td>
<td>8.879096</td>
<td>-38.83400</td>
<td>-1.535088</td>
<td>3.140000</td>
</tr>
<tr>
<td><strong>Std. Dev.</strong></td>
<td>0.131936</td>
<td>0.069632</td>
<td>0.015634</td>
<td>0.522543</td>
<td>7.608439</td>
<td>1.919280</td>
<td>1.175646</td>
</tr>
<tr>
<td><strong>Skewness</strong></td>
<td>1.197710</td>
<td>0.089242</td>
<td>1.116166</td>
<td>-0.033272</td>
<td>-1.826658</td>
<td>1.785025</td>
<td>-0.131905</td>
</tr>
<tr>
<td><strong>Kurtosis</strong></td>
<td>3.909346</td>
<td>1.375206</td>
<td>3.656770</td>
<td>1.630053</td>
<td>10.06744</td>
<td>6.961553</td>
<td>3.301219</td>
</tr>
<tr>
<td><strong>Jarque-Bera</strong></td>
<td>20.78901</td>
<td>8.460739</td>
<td>17.14641</td>
<td>5.957079</td>
<td>200.4356</td>
<td>90.05735</td>
<td>0.507709</td>
</tr>
<tr>
<td><strong>Probability</strong></td>
<td>0.000031</td>
<td>0.014547</td>
<td>0.000189</td>
<td>0.050867</td>
<td>0.000000</td>
<td>0.000000</td>
<td>0.775805</td>
</tr>
</tbody>
</table>

Source: Team’s calculations.

#### 4.2 Methodology

To estimate the distributional effect of monetary policy on Vietnam’s economy, we employ the vector autoregressive (VAR) model with the following variables: `refin_rate`, `exc_rate`, `gini`, `claim`, `ca_gdp`, `inf`, and `gdp`. The Gini Index is a proxy for income inequality, refinancing rate and claim to private sector representatives for changes in monetary policy. In the recent past, SBV has seldom adjusted its policy rates. Therefore, changes in monetary policy are not fully reflected by fluctuations in policy rates. In comparison with other policy rates, the refinancing rate is the most suitable proxy for SBV’s monetary policy stance. Moreover, claims of the private sector is one of the best proxies of the monetary policy stance in Vietnam. The ratio of the current account to GDP and nominal exchange rate of USD/VND represent the external sector. The economic growth rate and inflation rate are also included. The VAR model takes the following form:

$$x_t = (d(refin\_rate_t), d(exc\_rate_t), d(gini_t), d(claim_t), ca\_gdp_t, inf_t, d(gdp_t))'$$

where:

- `refin_rate_t` is the logarithm of the refinancing rate at the end of a quarter
- `exc_rate_t` is the logarithm of the average exchange rate
\( gini_t \) is the logarithm of the Gini coefficient index

\( claim_t \) is the logarithm of the total credit to the private sector

\( ca\_gdp_t \) is the ratio of the current account to GDP

\( inf_t \) is the growth rate of the consumer price index

\( gdp_t \) is the real gross domestic product growth rate

We estimate the two VAR models with some significant restrictions, including VAR Basic (4 variables) and VAR Full (7 variables).

4.3 Empirical Results

Before employing the VAR models, it is important to test whether the variables used in the model are stationary or not. This step makes sure that the variables are not subject to spurious correlation. The results of the unit root test is shown in Table 7. The ratio of the current account to GDP and inflation rate is stationary at level. All other variables are stationary at 1\(^{st}\) difference at 1% or 5% significance levels.

<table>
<thead>
<tr>
<th></th>
<th>At level</th>
<th></th>
<th>At 1(^{st}) difference</th>
<th></th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t-statistic</td>
<td>p-value</td>
<td>t-statistic</td>
<td>p-value</td>
<td></td>
</tr>
<tr>
<td>refin_rate</td>
<td>-2.613024</td>
<td>0.0949</td>
<td>-6.927330</td>
<td>0.0000</td>
<td>Stationary at 1</td>
</tr>
<tr>
<td>exc_rate</td>
<td>-0.788966</td>
<td>0.8160</td>
<td>-6.021114</td>
<td>0.0000</td>
<td>Stationary at 1</td>
</tr>
<tr>
<td>gini</td>
<td>-2.335657</td>
<td>0.1638</td>
<td>-5.149823</td>
<td>0.0001</td>
<td>Stationary at 1</td>
</tr>
<tr>
<td>claim</td>
<td>0.008988</td>
<td>0.9560</td>
<td>-8.580858</td>
<td>0.0000</td>
<td>Stationary at 1</td>
</tr>
<tr>
<td>ca_gdp</td>
<td>-5.166897</td>
<td>0.0000</td>
<td></td>
<td></td>
<td>Stationary at 0</td>
</tr>
<tr>
<td>inf</td>
<td>-5.030616</td>
<td>0.0001</td>
<td></td>
<td></td>
<td>Stationary at 0</td>
</tr>
<tr>
<td>gdp</td>
<td>-1.674883</td>
<td>0.4392</td>
<td>-3.349543</td>
<td>0.0164</td>
<td>Stationary at 1</td>
</tr>
</tbody>
</table>

Source: Team’s own calculations.
The optimal lag is checked by the lags criteria test. The stability of the model is checked by the AR root test while the autocorrelation phenomena is checked by the LM test to determine the consistency and efficiency of VAR. The impulse response function (IRF) is used to analyze the response of the Gini index to shocks (Figure 9).

In general, the IRF results show that an expansionary monetary policy leads to higher economic growth and inflation rate. These results are as predicted by economic theories. Moreover, a shock to monetary policy by decreasing the policy rate or increasing money supply has a positive effect on \( gini_r \). More specifically, the Gini Index in Vietnam decreases in the first four quarters. This effect is statistically significant for the first four quarters. It is hard to understand the transmission channels, but the Gini Index is statistically significant when inflation increases, thus we can assume that the transmission channel may occur through the inflation channel.

**Figure 9**
**Impulse Response Function Var Basic (4 Variables)**

![Impulse Response Function Var Basic (4 Variables)](image)

Source: Team’s calculations.

To clarify the contribution of the shocks to the variance of Gini Index, the variance decomposition results are calculated (Figure 10). The results show that the refinancing rate shocks explain most of the variation in the Gini Index, followed by inflation. Hence, the variance decomposition results support the above findings and confirm the importance of monetary policy in variances of the Gini Index in Vietnam.
In terms of the VAR full model with seven variables, economic growth and inflation have a similar response to an expansionary monetary policy. Interestingly, the Gini Index decreases for the first nine quarters after monetary policy shock occurs (Figure 11). Moreover, lower interest rate implies higher real claims, even if the positive impact on credit lasts only two quarters, and after that it becomes negative. The current account to GDP decreases all the time, implying that Vietnam borrows from the rest of the world. As a consequence of the current account deficit, the exchange rate decreases only in the longer term.

Source: Team’s own calculations.
When the model includes more variables, inflation explains most of the volatility of the Gini Index, followed by fluctuations in the refinancing rate (Figure 12). Hence, both VAR models confirm the importance of monetary policy in the variability of the Gini Index. Overall, the research concludes that changes in monetary policy (represented by refinancing rate) have a positive effect on the Gini Index in the case of Vietnam. In other words, a tightening monetary policy has an adverse effect on income inequality in Vietnam. It is concluded that the distributional effect of monetary policy exists in the Vietnamese economy.

**Figure 12**

Variance Decomposition VAR Full (7 Variables)

Source: Team’s own calculations.

5. Conclusion and Recommendations

The VAR models and the impulse-response analysis are employed in this study to examine the effects of monetary policy shocks on income inequality for the period from 2000-2018 in Vietnam. The study has the following main findings:

*Firstly*, the empirical results imply that changes in monetary policy have significant impacts on income inequality in Vietnam. By implementing an easing monetary policy through the decreasing of interest rates or increasing money supply, the SBV could improve income inequality in Vietnam.

*Secondly*, both the inflation rate, credit, and economic growth show a positive relationship with monetary policy shocks. In other words, these macroeconomic variables would increase when the central bank conducts expansionary monetary policy. This is corroborated by economic theories.

*Thirdly*, the study does not find strong evidence on the relationship between the external sector which is represented by the exchange rate and the ratio of the current account to GDP and income inequality in Vietnam.
As a result of these conclusions, there are significant recommendations for the SBV in implementing monetary policy as follows:

Firstly, given the strong effects of refinancing rates and money supply on income inequality, the SBV may consider paying more attention to the income inequality factor in the future, especially when making decisions related to monetary policy adjustments.

Secondly, besides policy rates, the SBV should consider continuing its current interest rate policies, such as: interest rates ceiling on VND deposit with terms less than 6 months, VND short-term lending rate cap applicable for some preferred sectors since these interest rates have contributed to Vietnam’s considerable progress in credit access index, which in turn support the equality target. Moreover, the Vietnam Bank’s social policies and services should be further improved to help boost the Government’s strategies to eradicate poverty and improve social welfare.

Thirdly, the SBV should facilitate microfinance institutions that can operate efficiently in the provision of banking services to the low-income group which normally face a lot of difficulties in accessing services from commercial banks. Moreover, in context of implementing the National Financial Inclusion Strategy, the SBV should provide strong support to the trend of digitalizing of banking services, encourage credit institutions to exploit smart data to be able to provide safe, convenient and personalized financial products and services at reasonable prices with advanced technology, particularly for low-income and vulnerable people, small and micro-sized enterprises.
References


